I-10 EAST CORRIDOR PROFILE STUDY

SR 202L (SANTAN FREEWAY) TO NEW MEXICO STATE LINE

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Draft Working Paper 3: Corridor Performance Goals and Objectives

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Arizona Department of Transportation

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LIST OF ABBREVIATIONS

ABBREVIATION	NAME
ADOT	Arizona Department of Transportation
AGFD	Arizona Game and Fish Department
AZTDM	Arizona Travel Demand Model
BCA	Benefit Cost Analysis
BqAZ	Building a Quality Arizona
BLM	Bureau of Land Management
COG	Council of Governments
CPS	Corridor Profile Study
DMS	Dynamic Message Sign
FHWA	Federal Highway Administration
FY	Fiscal Year
I	Interstate
L	Loop
LRTP	Long Range Transportation Plan
MAG	Maricopa Association of Governments
MP	Milepost
MPD	Multimodal Planning Division
MPO	Metropolitan Planning Organization
N/A	Not Applicable
OP	Overpass
PA	Project Assessment
PAG	Pima Association of Governments
POE	Port-of-Entry
P2P	Planning to Programming
RWIS	Road Weather Information System
SCMPO	Sun Corridor Metropolitan Planning Organization
SEAGO	South East Arizona Government Organization
SERI	Species of Economic and Recreational Importance
SGCN	Species of Greatest Conservation Need
SHCG	Species and Habitat Conservation Guide
SHS	State Highway System
SHSP	Strategic Highway Safety Plan
SR	State Route
SWAP	State Wildlife Action Plan
TAC	Technical Advisory Committee
TI	Traffic Interchange
TPTI	Truck Planning Time Index
TTTI	Truck Travel Time Index
UP	Underpass
USDOT	United States Department of Transportation
10B	I-10 Business Route

1.0 INTRODUCTION

The Arizona Department of Transportation (ADOT) is the lead agency for this Corridor Profile Study of Interstate 10 (I-10) between State Route (SR) 202L (Santan Freeway) and the New Mexico State Line (I-10 East). This study will look at key performance measures relative to the I-10 East corridor, and the results of this performance evaluation will be used to identify potential strategic improvements.

The intent of the corridor profile program, and of the Planning to Programming (P2P) process, is to conduct performance-based planning to identify areas of need and make the most efficient use of available funding to provide an efficient transportation network. ADOT is conducting eleven corridor profile studies. The 11 corridors are being evaluated within three separate groupings.

The first three studies (Round 1) began in spring 2014, and encompass:

- I-17: SR 101L to I-40
- I-19: Mexico International Border to I-10
- I-40: California State Line to I-17

The second round (Round 2) of studies, initiated in spring 2015, includes:

- I-8: California State Line to I-10
- I-40: I-17 to the New Mexico State Line
- SR 95: I-8 to I-40

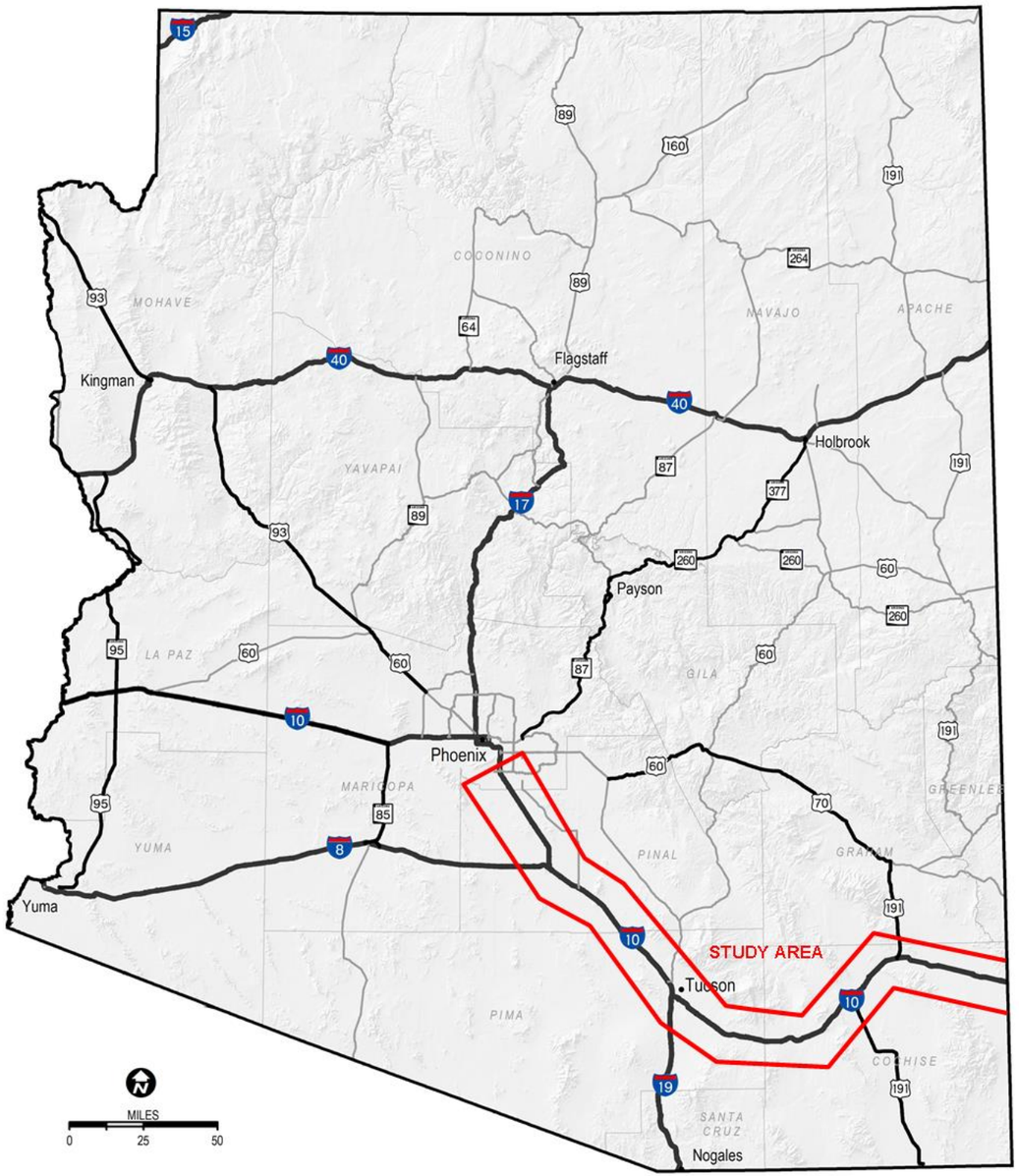
The third round (Round 3) of studies, to be initiated in fall 2015, includes:

- I-10: California State Line to SR 85 and SR 85: I-10 to I-8
- I-10: SR 202L to the New Mexico State Line
- SR 87/SR 260/SR 377: SR 202L to I-40
- US 60/US 70: SR 79 to US 191 and US 191: US 70 to SR 80
- US 60/US 93: Nevada State Line to SR 303L

The studies under this program will assess the overall health, or performance, of the state's strategic highways. The Corridor Profile Studies will identify candidate projects for consideration in the Multimodal Planning Division's (MPD) P2P project prioritization process, providing information to guide corridor-specific project selection and programming decisions.

I-10 East, SR 202L to the New Mexico State Line, depicted in **Figure 1**, is one of the strategic statewide corridors identified and is the subject of this Round 3 Corridor Profile Study.

Figure 1: Study Area



1.1 Corridor Study Purpose

The purpose of the Corridor Profile Study is to measure corridor performance to inform the development of strategic solutions that are cost-effective and account for potential risks. This purpose can be accomplished by following the process established by previous corridor profile studies to:

- Inventory past improvement recommendations.
- Define corridor goals and objectives.
- Assess existing performance based on quantifiable performance measures.
- Propose various solutions to improve corridor performance.
- Identify specific projects that can provide quantifiable benefits in relation to the performance measures.
- Prioritize projects for future implementation.

1.2 Corridor Study Goals and Objectives

The objective of this study is to identify a recommended set of prioritized potential projects for consideration in future construction programs, derived from a transparent, defensible, logical, and replicable process. The I-10 East Corridor Profile Study will define solutions and improvements for the corridor that can be evaluated and ranked to determine which investments offer the greatest benefit to the corridor in terms of enhancing performance.

The following goals have been identified as the desired outcome of this study:

- Link project decision-making and investments on key corridors to strategic goals.
- Develop solutions that address identified corridor needs based on measured performance.
- Prioritize improvements that cost-effectively preserve, modernize, and expand transportation infrastructure.

1.3 Working Paper 3 Overview

Working Paper 3 establishes the context of the I-10 East corridor, summarize the results of the corridor performance, and develop goals, objectives, and emphasis areas for the corridor.

The framework for measuring performance is based on the five performance areas used to characterize the health of the I-10 East corridor: pavement, bridge, mobility, safety, and freight. Working Paper 3 produces performance goals and objectives for the corridor against which baseline performance can be evaluated. Difference between baseline performance and performance goals and objectives provide the framework for defining corridor needs in the investment areas of preservation, modernization, and expansion.

1.4 Corridor Overview

The I-10 East corridor is a major east-to-west all-weather transcontinental Interstate highway that connects California (Santa Monica) with Florida (Jacksonville). I-10 is a major transportation artery route for freight as well as passenger vehicular traffic, connecting major metropolitan cities in the southern part of United States. I-10 plays a key role in the transportation infrastructure of southern Arizona, contributing to its economic success.

I-10 provides the most direct and fastest link between the greater Phoenix and Tucson areas and Los Angeles to the west, and major Texas and Florida cities to the east. I-10 provides a principal road link for freight traffic from the ports of California. This study builds on earlier planning efforts in developing and applying a performance-based process for prioritizing improvements to meet present and future needs in the corridor.

1.5 Study Location and Corridor Segments

The I-10 corridor is being studied in two separate corridor profile studies. One study extends from California State Line to SR 85, and this study extends from SR 202L to New Mexico State Line. For the purposes of this Corridor Profile Study, the portion from SR 202L to New Mexico is referred to as I-10 East.

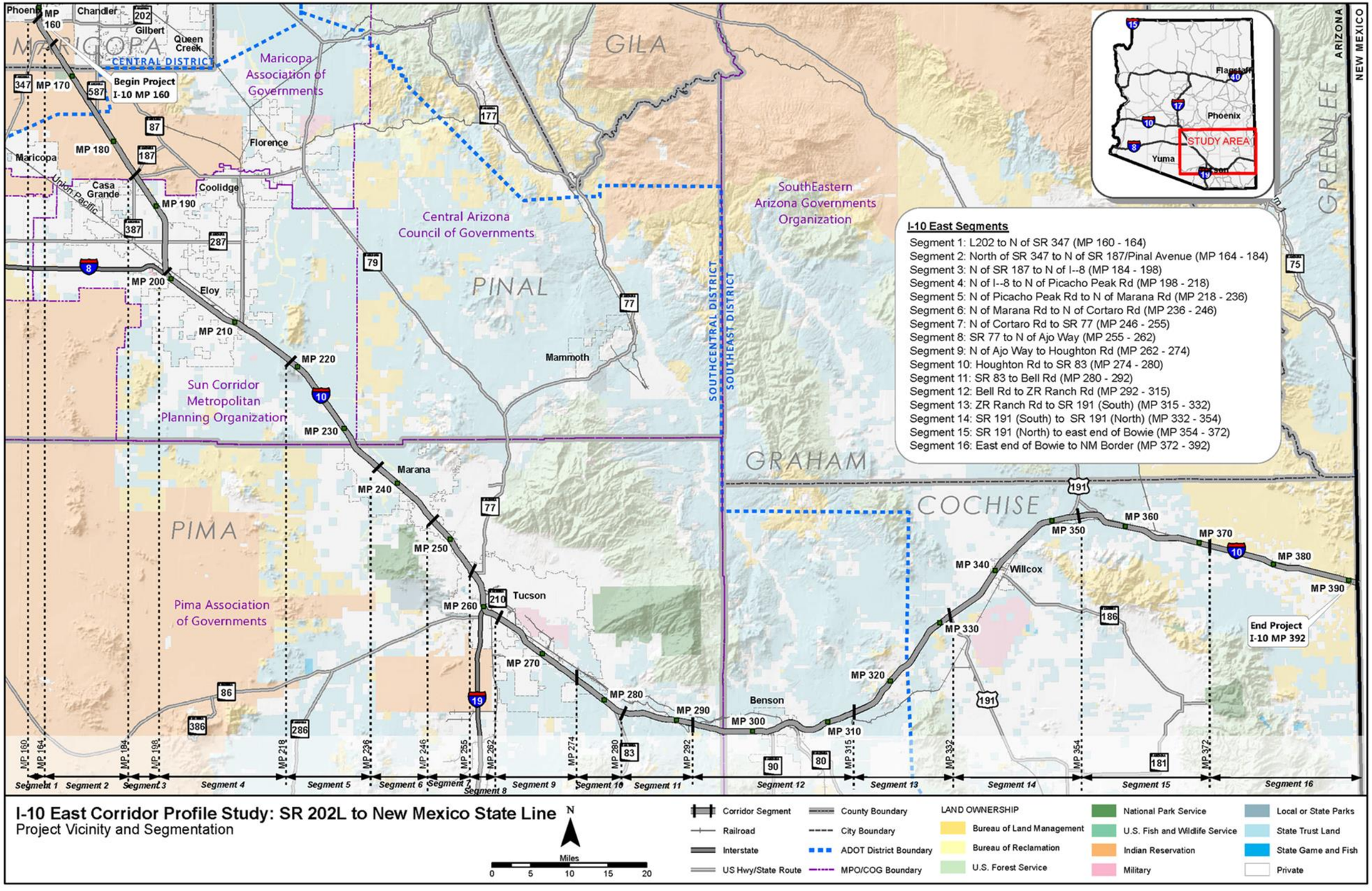
The I-10 East corridor is 232 miles long, from SR 202L (milepost [MP] 160) to the Arizona-New Mexico state line (MP 392). The corridor has been divided into 16 distinct segments based on regionally significant intersecting routes, changes in topography, or natural or human-made landmarks along the corridor. The shortest segment is 4 miles long and the longest is a little over 23 miles. Corridor segments are described in **Table 1** and shown in **Figure 2**.

Table 1: I-10 East Corridor Segmentation

Segment	Route	Begin	End	Approximate Begin Milepost	Approximate End Milepost	Approximate Length (miles)	Through Lanes (EB, WB)	2014 Average Annual Daily Traffic Volume (vpd)	Character Description
10E-1	I-10	Loop 202	North of SR 347	160	164	4	2/3,2/3	95,000	Begins at SR 202L (Santan Freeway) system traffic interchange, posted speed is 65 miles per hour (mph), characterized at "Urban Freeway." A lane drop occurs at about MP 162.5. South of Pecos Rd, this segment leaves the Phoenix metropolitan area and traverses the Gila River Indian Community.
10E-2	I-10	North of SR 347	North of SR 187/Pinal Ave	164	184	20	2,2	51,800	Most of this segment is characterized as "Rural 4-Lane Freeway;" posted speed is 75 mph. Rest areas are at MP 182 (EB) and MP 183 (WB). This segment is entirely within the Gila River Indian Community. Rising grade east of Gila River bridge crossing (MP 173) to end of segment.
10E-3	I-10	North of SR 187/Pinal Ave	North of I-8	184	198	14	2/3,2/3	40,300	Most of this segment is characterized as "Urban or Rural 6-Lane Freeway;" widens to three lanes in each direction at MP 187; drops to two lanes at MP 197. Adjacent to urbanizing area of Casa Grande.
10E-4	I-10	North of I-8	North of Picacho Peak Rd	198	218	20	2/3,2/3	38,800	This segment encompasses several different operation environments ("Rural 4-Lane," "Urban 4-Lane," and "Urban or Rural 6-Lane Freeway"). The I-8 system interchange is at MP 199. Portions of the segment are two lanes in each direction (west of MP 200 and between MPs 210 and 212.5). Adjacent to Eloy.
10E-5	I-10	North of Picacho Peak Rd	North of Marana Rd	218	236	18	3,3	41,900	Characterized as "Urban or Rural 6-Lane Freeway;" three lanes in each direction; posted speed of 75 mph. Area is largely rural, undeveloped desert; Union Pacific Railroad runs parallel on northern side of this segment, continuing to Tucson.
10E-6	I-10	North of Marana Rd	North of Cortaro Rd	236	246	10	3,3	61,200	Characterized at "Urban or Rural 6-Lane Freeway;" three lanes in each direction; posted speed of 75 mph. Traverses Marana as freeway enters the Tucson urbanized area.
10E-7	I-10	North of Cortaro Rd	SR 77	246	255	9	3,3	108,500	Characterized at "Urban or Rural 6-Lane Freeway;" three lanes in each direction; posted speed decreases at MP 246 to 65 mph through Tucson.
10E-8	I-10	SR 77	North of Ajo Way	255	262	7	3/4,3/4	117,600	Most of this segment is characterized as "Urban > 6-Lane Freeway;" widens to four lanes in each direction at MP 255, before dropping a lane at MP 259 (I-19). This segment includes the system traffic interchange with I-19 and serves the urbanized Tucson area.
10E-9	I-10	North of Ajo Way	Houghton Rd	262	274	12	2/3,2/3	59,500	Characterized as "Urban 4-Lane Freeway;" drops to two lanes in each direction at MP 263; posted speed limit increases to 75 mph at MP 271. The segment ends at Houghton Rd, which is considered the eastern extent of the Tucson urbanized area; generally rural to the east.
10E-10	I-10	Houghton Rd	SR 83	274	280	6	2,2	34,200	Characterized as "Urban 4-Lane Freeway." The area is largely rural, with the exception of Vail (unincorporated place) at the SR 83 junction.
10E-11	I-10	SR 83	Empirita Rd	280	292	12	2,2	26,700	Characterized as "Rural 4-Lane Freeway > 25K;" posted speed reduced to 65 mph at MP 288 for approximately 1 mile. Exit 292 (Empirita Rd) has an unconventional "folded diamond" interchange type.

Segment	Route	Begin	End	Approximate Begin Milepost	Approximate End Milepost	Approximate Length (miles)	Through Lanes (EB, WB)	2014 Average Annual Daily Traffic Volume (vpd)	Character Description
10E-12	I-10	Empirita Rd	ZR Ranch Rd	292	315	23	2,2	21,100	Characterized as “Rural 4-Lane Freeway < 25K.” This segment traverses Benson.
10E-13	I-10	ZR Ranch Rd	US 191 (south)	315	332	17	2,2	16,700	Characterized as “Rural 4-Lane Freeway < 25K.” This segment has steep grades eastbound (as high as 6 percent) and westbound (as high as 4 percent), causing considerable truck slowing; highest point on I-10 is at MP 321 (4,937 feet).
10E-14	I-10	US 191 (south)	US 191 (north)	332	354	22	2,2	15,400	Characterized as a “Rural 4-Lane Freeway < 25K;” traverses Willcox. US 191 is coincident with this segment.
10E-15	I-10	US 191 (north)	Eastern end of Bowie	354	372	18	2,2	14,100	Characterized as “Rural 4-Lane Freeway < 25K.” At MP 362, the freeway makes a wide sweeping curve around Bowie, and unincorporated census-designated place.
10E-16	I-10	Eastern End of Bowie	New Mexico State Line	372	392	20	2,2	12,200	Characterized as a “Rural 4-Lane Freeway < 25K.” At MP 378, the freeway makes a wide sweeping curve around San Simon, at unincorporated census-designated place. The San Simon commercial vehicle port of entry (POE) is at MP 383, and a rest area is at MP 388.

Figure 2: Segmentation Map



2.0 CORRIDOR FUNCTIONALITY

Arizona is connected with the rest of the country through two major east-to-west transcontinental Interstate corridors, namely I-10 and I-40. I-10 connects Southern Arizona to California on the west coast and Florida on the east coast. The I-10 East corridor provides a significant freight and travel route to the eastern portion of the United States and a connection to I-8 and I-19, providing a link to international commerce.

2.1 National Context

I-10 is part of the National Highway System, traversing 2,460 miles, making it the fourth-longest highway in the country. Its western terminus is in California (SR 1 in Santa Monica) and its eastern terminus is I-95 (in Jacksonville, Florida). I-10 intersects with eight of the nation's ten north-to-south interstates and provides access to eight states and many major U.S. cities including Tallahassee, Florida; Mobile, Alabama; New Orleans, Louisiana; Baton Rouge, Louisiana; Houston, Texas; San Antonio, Texas; and Los Angeles, California. The Union Pacific Railroad runs along I-10 from Los Angeles to New Orleans. Mexico, one of the largest trading partners with the United States, is connected with I-10 by way of I-19 and SR 189 through Nogales, Arizona.

The portion of I-10 between Phoenix and Tucson is also a major element of the CANAMEX Trade Corridor, a High Priority Corridor, as defined by Congress in the 1995 National Highway Systems Designation Act. Through Arizona this route is defined as generally following I-19 from Nogales to Tucson; I-10 from Tucson to Phoenix; and US 93 in the vicinity of Phoenix to the Nevada Border.

2.2 Regional Connectivity

I-10 is Arizona's southernmost continuous east-to-west transportation corridor, stretching beyond Arizona's border with California and New Mexico. I-10 is identified as a *Key Commerce Corridor* within Arizona. I-10 attracts commercial truck, intercity, commuter, recreational, and out-of-state through traffic. The I-10 East corridor provides connections to State and U.S. highways including SR 202L (Santan Freeway), SR 347, SR 587, SR 287, I-8, SR 87, SR 77, I-19, SR 83, SR 90, SR 80, US 191, and SR 186. These highways provide access to tourist attractions, national parks and monuments, and many Arizona cities. In addition to linking Phoenix and Tucson (Arizona's two largest cities), Arizona communities that are linked by the I-10 East corridor include Chandler, Casa Grande, Eloy, Marana, Benson, and Willcox. I-10 plays a vital role in transporting fresh produce and agricultural goods from Mexico to Arizona and other states because it is connected to the busiest Arizona land port of entry (Mariposa) by way of I-19 and SR 189.

2.3 Commercial Truck Traffic

Arizona is a pass-through state for much of the freight originating at the ports of Los Angeles and Long Beach and traveling east to Texas and the central United States for distribution. As a result, I-10 is experiencing increasing freight flows from both domestic and international sources. The average daily truck traffic volumes on I-10 range from approximately 5,000 (eastern part of I-10 corridor near the New Mexico State Line) to 19,000 (Tucson area) trucks per day. The high truck volumes equates to 10 to 40 percent of the total daily traffic volume throughout the corridor (ADOT Traffic Division, 2016). The I-10 segments within Phoenix and Tucson experience particularly high commercial truck activity. A steady truck volume throughout the I-10 corridor results in as much as 40 percent truck traffic in the rural section of I-10 near New Mexico State Line where daily traffic volumes decrease. Phoenix and Tucson are identified as key regional trade, service, and distribution centers in Arizona with their strategic location in relation to Los Angeles, San Diego, and Mexico.

I-10 is one of the Key Commerce Corridors, recognizing the significance of this route to Arizona's economy. Key Commerce Corridors represent a strategic statewide approach to leverage infrastructure improvements to enhance Arizona's competitive economic position.

Under the Fixing America's Surface Transportation Act (FAST Act), I-10 is identified as a National Highway Freight Network to strategically direct Federal resources and policies toward improved freight performance. As the primary connections for east-west goods movement arriving from Mexico (via SR 189 and I-19), truck traffic along I-10 carries a significant volume of high value imported commercial goods and agricultural products.

The I-10 San Simon Port of Entry facility is approximately 2 miles west of the New Mexico State Line. The facility performs inspections and other duties to enforce state and federal laws for commercial vehicles.

2.4 Commuter Traffic

Most commuter traffic along I-10 East occurs within the urbanized areas of greater Phoenix and Tucson. According to the most recent traffic volume data maintained by ADOT (2014), traffic volumes range from approximately 10,500 vehicles (east of Bowie) per day in rural areas to 165,000 vehicles per day through Tucson. The section between Tucson and Phoenix also has a significant number of commuters, adding to the volume with approximately 50,000 vehicles per day (ADOT Traffic Division, 2016).

According to 2014 American Community Survey data from the U.S. Census Bureau, 80 percent of the workforce in Casa Grande, 75 percent of the workforce in Phoenix, and 74 percent of the workforce in Tucson relies on a private vehicle to get to work. The smaller communities along I-10 East have a high percentage of workers commuting long distances (presumably to the metropolitan areas of Tucson or Phoenix).

2.5 Recreation and Tourism

I-10 East provides access to recreational opportunities in southeastern Arizona and southern New Mexico. Many recreational users travel on I-10 East to access Picacho Peak State Park, Catalina State Park, Saguaro National Park, and Chiricahua National Monument. Motorists also use I-10 East to access I-8 when travelling west to San Diego or to access I-19 when travelling south to Nogales, Mexico. Tucson and Phoenix are also major recreational and tourist destinations for motorists.

2.6 Multimodal Uses

The statewide emphasis is to create a multimodal transportation system. This means that, while the safety and mobility of travelers via motor vehicles will remain a primary concern, the overall focus will be widened to include greater attention to all relevant modes of travel, including freight and passenger rail, bicycles, pedestrians, bus, transit, and aviation. This section provides a review of the status of these varying modes of transportation on the I-10 East corridor.

2.6.1 Freight Rail

The Union Pacific Railroad's (UPRR), one of the top transporters of intermodal freight in North America, Sunset Route runs parallel to the I-10 East Corridor from junction with I-8 to the New Mexico State Line. The Sunset Line carries large amounts of freight from the coast to the Midwest and Texas. Currently, the line experiences bottlenecks due to large stretches where the route is double tracked. UPRR also operates two branch routes that connect the Sunset Route to Phoenix from Picacho and Nogales from Tucson. UPRR is planning to turn the Sunset Route into a high capacity route by double tracking the line throughout Arizona.[1].

2.6.2 Passenger Rail

Amtrak operates the Sunset Limited rail service, which runs along portions of I-10 East from north of Casa Grande to New Mexico with Arizona stops in Maricopa, Tucson, and Benson. ADOT is currently conducting a feasibility study for a high-speed passenger rail line between Phoenix and Tucson.

2.6.3 Bicycles/Pedestrians

Bicycles are prohibited from using I-10 East from the start of the corridor through Tucson to Kolb Road (MP 270). Bicycles are permitted to use the shoulders for the rest of the corridor, which generally are 10-feet-wide or wider. Pedestrians are prohibited on the entire route.

2.6.4 Bus/Transit

The largest regional public transportation service providers along the I-10 East corridor are Valley Metro in the Phoenix area and Sun Tran in Tucson. Multiple private companies provide bus service between Phoenix and Tucson. Greyhound operates a bus that has stops all along the I-10 East corridor from Phoenix to New Mexico.

2.6.5 Aviation

Airports in the vicinity of the I-10 East corridor are the Gila River Memorial, Casa Grande Municipal, Eloy Municipal, Pinal Airpark, Marana Regional, Tucson International, Benson Municipal, and Cochise County. Most of these airports are small regional airports with very few daily flights. Tucson International Airport is the only airport along the corridor with scheduled passenger service on commercial airlines. It provides flights throughout the country and to Mexico.

2.7 Traveler Amenities

Within the I-10 East corridor, ADOT operates three rest areas and a weigh station. The Sacaton Rest Area, which serves both directions, is at MP 183. The Texas Canyon Rest Area, which serves both directions, is at MP 320. The San Simon Rest Area serves both directions, at MP 388. The Texas Canyon and San Simon Rest Areas were renovated in 2015 (San Simon remains under construction at this time). The San Simon weigh station is at MP 383.

There are 22 dynamic message signs (DMS) throughout the corridor, with most between Phoenix and Tucson and just east of Tucson. An additional 15 DMS, noted in the DMS Master Plan, are planned for installation.

2.8 Tribes

The Gila River Indian Community is a semiautonomous Native American-governed territory covering 584 square miles adjacent to Phoenix within Maricopa and Pinal Counties. It is home to members of both the Akimel O'odham and Pee-Posh tribes. The population of the reservation is 11,257, within seven districts spread along the Gila River[2].

2.9 Jurisdictions, Population Centers, and Major Traffic Generators

As shown in Figure 2, I-10 East crosses multiple jurisdictions and land holdings throughout Maricopa, Pinal, Pima, and Cochise Counties. Most of the I-10 East segments 10E-1 and 10E-2 (MPs 160 to 184) pass through the Gila River Indian Community. Most land on either side of I-10 in segments 10E-3 and 10E-4 (west of MP 210) is privately owned. Segments 10E-4 (east of MP 210) and 10E-5 (west of MP 230) traverse a large area of Arizona State Trust Land. Segments 10E-7 and 10E-8 pass through largely private land, whereas east of Tucson there are significant areas of Arizona State Trust Land. Most of the land to the north of segment 10E-16 is owned by the Bureau of Land Management, and the land to the south is a checkerboard of land owned by the Bureau of Land Management and the Arizona State Land Trust.

2.9.1 Population Centers

Major population centers along the I-10 East corridor are within the urbanized areas of Phoenix, Casa Grande, and Tucson. The modest growth anticipated by 2040 in Cochise County at the eastern portion of the corridor is countered by the significant population growth expected in the western portion (encompassing Maricopa and Pinal counties), and modest growth in the Tucson area. The Tucson area growth is largely forecast to the north (Marana) and east (Vail) along the I-10 corridor. Growth throughout the corridor and the lack alternate routes result in projections for higher traffic volumes throughout the corridor. **Table 2** summarizes the U.S. Census population for communities along I-10 East.

[1] Source: Arizona State Rail Plan (2011), Appendix A

[2] Source: https://en.wikipedia.org/wiki/Gila_River_Indian_Community

Table 2: Current and Future Population

Area	2010 Population	2015 Population	2040 Population	% Change 2010-2040	Total Growth
Maricopa County	**3,824,100**	**4,063,700**	**6,174,800**	**61%**	**2,350,700**
Phoenix	1,445,632	1,517,700	2,116,900	46%	671,268
Chandler	236,123	250,700	301,400	28%	65,277
Gila River	3,000	3,000	3,300	10%	300
Pinal County	**376,369**	**414,999**	**915,200**	**143%**	**538,831**
Casa Grande	48,571	52,456	106,668	120%	58,097
Florence	25,537	29,704	73,917	190%	48,380
Coolidge	11,825	13,786	43,332	266%	31,507
Eloy	16,631	20,339	72,206	334%	55,575
Pima County	**980,263**	**1,022,079**	**1,366,300**	**39%**	**386,037**
Marana	34,961	41,019	75,741	117%	40,780
Tucson	520,116	537,129	718,187	38%	198,071
Vail	10,208	11,066	18,528	82%	8,320
Cochise County	**131,346**	**134,166**	**155,200**	**18%**	**23,854**
Mescal	1,812	1,824	2,472	37%	663
Bowie	449	No population projections			
Benson	5,105	5,288	7,766	52%	2,661
Willcox	3,757	3,721	4,315	15%	558

Source: U.S. Census, Arizona Department of Administration – Employment and Population Statistics

2.9.2 Major Traffic Generators

Within the Phoenix and Tucson areas, the major traffic generator is local traffic, from both commuters and other daily travelers. Within Phoenix, Tucson, and Casa Grande, traffic is also generated by freight, including agricultural and industrial traffic. Outside of the study area, major traffic generators are the southern California ports and the Nogales border crossing (Mariposa), which generate significant freight traffic that uses I-10 East to access the central and eastern markets of the United States. Furthermore, recreational amenities around Tucson generate additional traffic on I-10 East. The Port of Tucson is just off I-10; it is a full-service inland port and rail yard. The Port of Tucson is a federally designated, activated Foreign Trade Zone and a State of Arizona Enterprise Zone, generating additional foreign and domestic freight traffic through Tucson[3].

2.10 Wildlife Linkages Considerations

The Arizona State Wildlife Action Plan (SWAP) provides a 10-year vision for the entire state, identifying wildlife and habitats in need of conservation, providing insight regarding the stressors to those resources, and suggesting actions that can be taken to alleviate those stressors. The Habimap Tool™ (http://www.habimap.org/) provides an interactive database of information included in the SWAP. This database and other environmental resources should be conducted early on during all future project-related activities to ensure appropriate environmental compliance. The following wildlife and habitat considerations affecting rights-of-way along the I-10 East corridor were identified (these should not be considered a comprehensive listing of affected resources):

- Wildlife waters are northeast of Picacho, southwest of I-10 from Ina Road to Grant Road, and northwest of I-10 from Dragoon Road to US 191.
- I-10 bisects allotments/pastures from southeast of Picacho to the Pima/Pinal County line, and more infrequently from Colossal Cave Road to the Arizona-New Mexico border. These areas correspond primarily to State Land holdings, with areas closer to the Arizona-New Mexico border controlled by the Bureau of Land Management.
- Areas of AZ Missing Linkages lie in and around areas of Potential Wildlife Linkages along I-10 from east of Picacho to Tucson, from east of Vail to west of Benson, and from east of Benson to the Arizona-New Mexico border.
- Species and Habitat Conservation Guide indicates moderately sensitive habitats along I-10 from Casa Grande into Tucson and highly sensitive habitats east of Tucson to the Arizona-New Mexico border.
- Moderate to high levels of Species of Economic and Recreational Importance are identified along I-10 throughout Casa Grande and spanning east toward the Arizona-New Mexico border.
- Species of Greatest Conservation need are identified all along the I-10 corridor from Phoenix at SR 202L to the Arizona-New Mexico border.

2.11 Transportation Assets

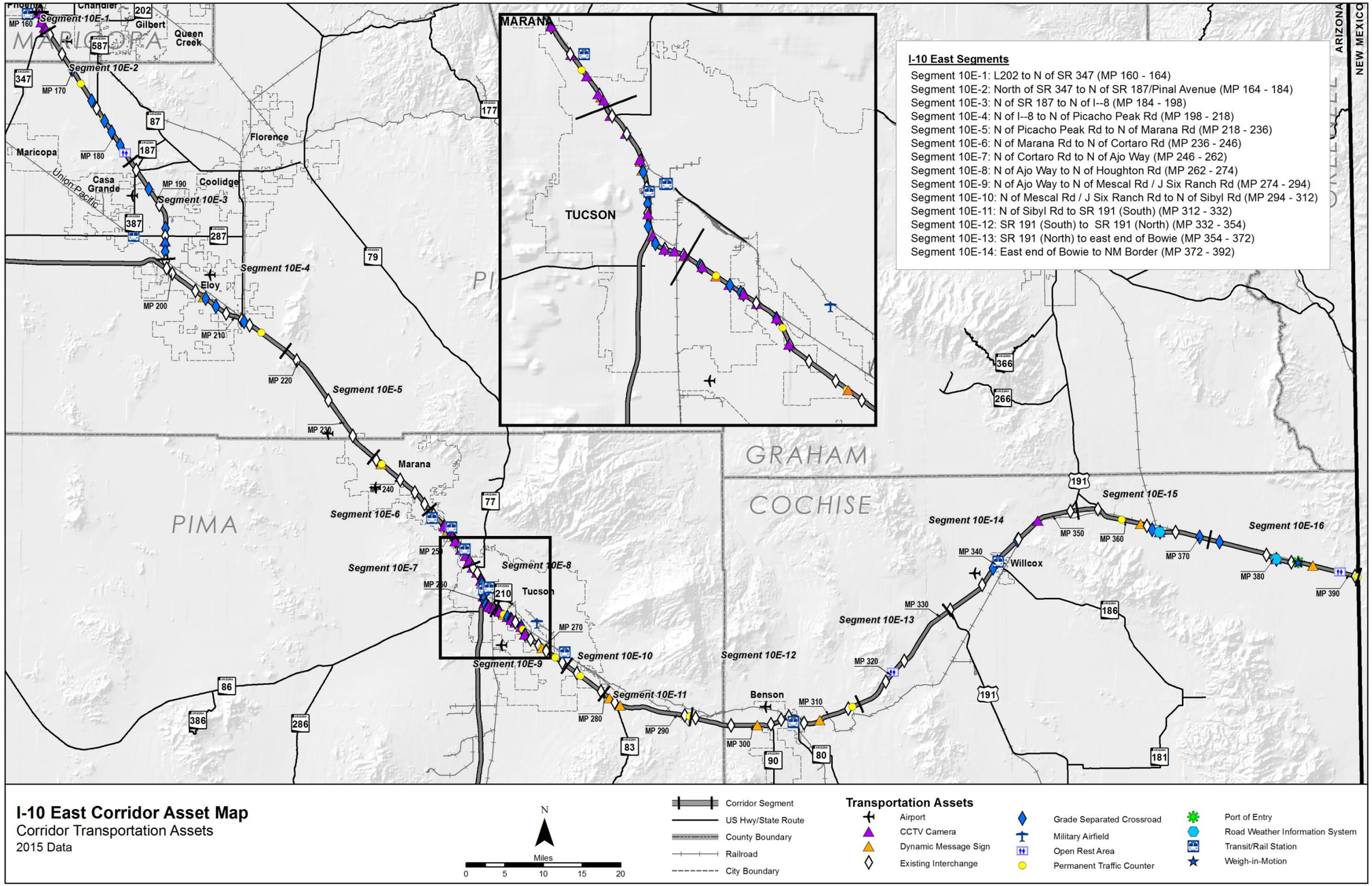
Most assets are in the more densely populated portions of the corridor, specifically through Tucson. Many bus stops are in Tucson near the I-10 corridor. There is also an Amtrak station and an airport. A freight weigh station is near the New Mexico border in San Simon, Arizona. There are DMS and closed-circuit television cameras throughout the corridor. Amtrak runs along I-10 from Casa Grande to the New Mexico border, with stops in Tucson and Benson. Fifteen permanent count stations are found intermittently along the I-10 East corridor. There are three rest areas along the corridor at Sacaton Rest Area at MP 183, Texas Canyon Rest Area at MP 320, and San Simon Rest Area at MP 388.

2.12 Conclusion of Corridor Characteristics

The I-10 East corridor serves a major role for interstate commercial and passenger trips. The corridor is identified by ADOT as a Strategic Corridor, connecting California to points across the southern United States. The I-10 corridor is a cornerstone of the State's economy and experiences heavy commercial freight activity. All of the metropolitan areas along the corridor have grown and are forecast to experience continued growth. The significant increased traffic volumes projected for the corridor have made the widening of I-10 necessary in the past and necessitate plans for additional widening projects in the future. The portion of I-10 East between Phoenix and Tucson is designated as part of the CANAMEX corridor, linking Mexico, United States and Canada. I-10 East is expected to play key role as an international commerce, agricultural, recreational, tourist, and regional traffic corridor.

[3] Source: https://www.linkedin.com/company/port-of-tucson

Figure 3: Transportation Assets



3.0 SUMMARY OF CORRIDOR PERFORMANCE

A system to establish baseline corridor performance was developed through a collaborative process with ADOT, the Technical Advisory Committee (TAC) and the corridor teams for the profile studies. Baseline performance was evaluated using primary and secondary performance measures to define the corridor health and identify locations warranting further analysis to define needs. Corridor needs constitute the difference between baseline corridor performance and performance objectives.

The performance system consists of five areas: Pavement, Bridge, Mobility, Safety, and Freight. For each of these performance areas, a primary measure – known as the Index – was defined along with a set of secondary measures that allows for a more detailed analysis of corridor performance. **Table 3** lists the primary and secondary measures that were evaluated for each of the five performance areas.

Working Paper 2 evaluated the overall corridor performance (as a weighted average by segment length) and individual segment performance in the five aforementioned areas. The primary and secondary performance measures were quantified where feasible. A scale for each measure was developed based on adopted ADOT thresholds, where applicable, or on statistical analysis of statewide datasets. The scaling is split into three levels, each of which is represented by a corresponding color. The scale levels are named “good” (green), “fair” (yellow), and “poor” (red), except for measures based on a comparison to statewide averages (e.g., the Safety performance area) where the levels are called “above average” (green), “average” (yellow), and “below average” (red). Some of the secondary measures are “hot spots” that cannot be readily quantified at a segment or overall corridor level, so no scaling was developed for “hot spots”.

Good / Above Average Performance
Fair / Average Performance
Poor / Below Average Performance

The corridor weighted average ratings are summarized in **Figure 4**, which also provides a brief description of each performance measure. **Figure 5** shows the corridor and segment performance for each primary measure. The following sub-sections summarize the measured performance in each performance area according to the analysis findings documented in Working Paper 2.

Table 3: Performance Measures

Performance Index	Primary Measures	Secondary Measures
Pavement	**Pavement Index** (based on a combination of International Roughness Index and Cracking)	• Directional Pavement Serviceability • Pavement Failure • Pavement Hot Spots
Bridge	**Bridge Index** (based on Deck Rating, Substructure Rating, Superstructure Rating, and Structural Evaluation Rating)	• Bridge Sufficiency Rating • Functionally Obsolete Bridges • Bridge Rating • Bridge Hot Spots
Mobility	**Mobility Index** (based on combination of Current V/C and Future V/C)	• Existing Directional Peak Hour Volume/Capacity Ratio (V/C) • Future Daily V/C • Directional Travel Time Index (TTI) • Directional Planning Time Index (PTI) • Directional Road Closure Frequency • Non-Single Occupancy Vehicle Trips • Bicycle Accommodation
Safety	**Safety Index** (based on frequency of fatal and incapacitating injury crashes)	• SHSP Emphasis Areas • Crash Unit Types • Directional Safety Index • Safety Hot Spots
Freight	**Freight Index** (based on Truck Planning Time Index)	• Directional Truck Travel Time Index (TTTI) • Directional Truck Planning Time Index (TPTI) • Directional Road Closure Duration • Bridge Vertical Clearance • Bridge Clearance Hot Spots

Figure 4: Performance Summary

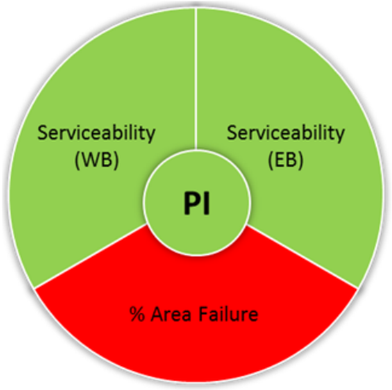
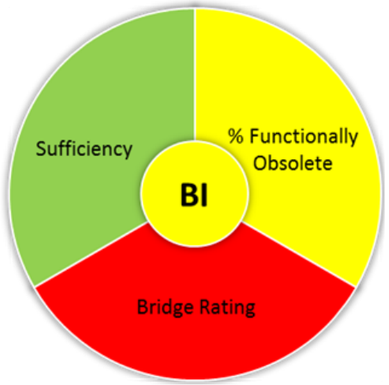
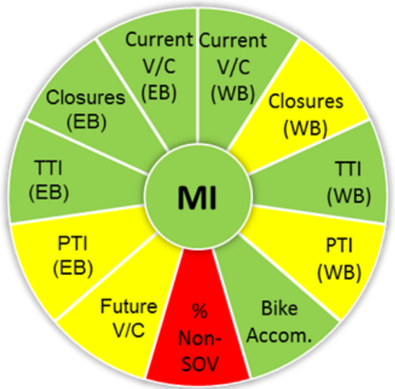
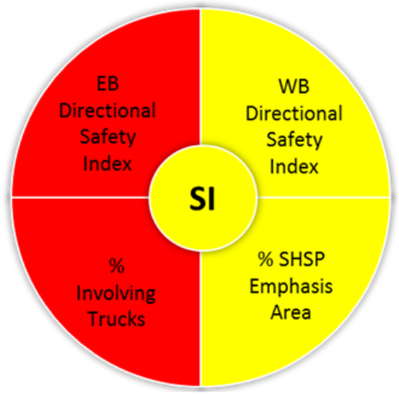
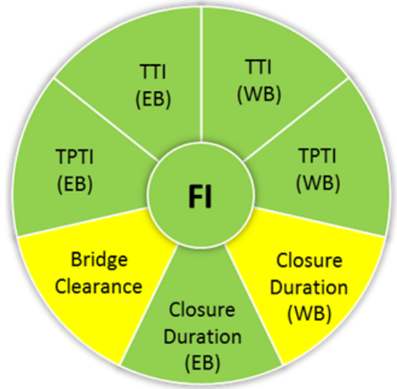
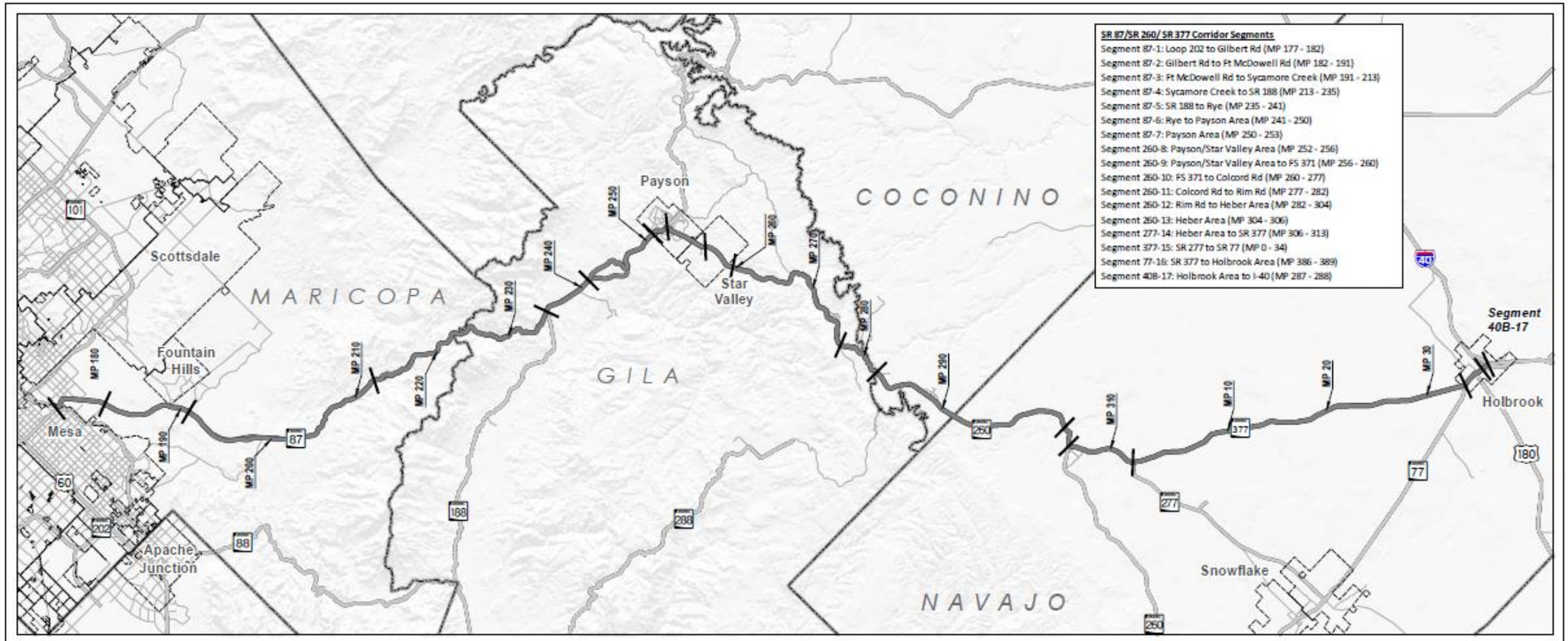
Pavement	Bridge	Mobility	Safety	Freight
				
Pavement Index (PI): based on two pavement condition ratings from the ADOT Pavement Database. The two ratings are the International Roughness Index (IRI) and the Cracking Rating. The calculation of the Pavement Index uses a combination of these two ratings.	**Bridge Index (BI):** based on four bridge condition ratings from the ADOT Bridge Database. The four ratings are the Deck Rating, Substructure Rating, Superstructure Rating, and Structural Evaluation Rating.	**Mobility Index (MI):** an average of the current volume-to-capacity (V/C) ratio and the projected 2035 V/C ratio.	**Safety Index (SI):** combines the bi-directional frequency and rate of fatal incapacitating injury crashes, compared to crash occurrences on similar roadways in Arizona.	**Freight Index (FI):** a reliability performance measure based on the bi-directional planning time index for truck travel.
Directional Pavement Serviceability – the weighted average (based on number of lanes) rating which measures the condition of the pavement in each direction of travel. **Pavement Failure** – the percentage of pavement area that is rated above the failure thresholds for IRI or Cracking, as established by ADOT Materials Group (IRI > 105 or Cracking > 15).	**Sufficiency** – indicative of bridge sufficiency to remain in service. The factors that contribute to the Sufficiency Rating include structural adequacy and safety, serviceability and functional obsolescence, and essentiality for public use. **% Functionally Obsolete** – indicative of the percentage of deck area on bridges that is no longer functionally adequate for its current use, such as lack of shoulders or the inability to handle current traffic volumes. Functionally Obsolete does not directly relate to the structural adequacy. **Bridge Rating** – identifies the lowest rating on each segment.	**Directional Current V/C** – the existing peak hour V/C ratio in both directions of the corridor. This measure provides an understanding of the directional operating characteristics of the corridor during the existing peak hour from a mobility congestion standpoint. **Future V/C** – a measure of the future 2035 V/C ratio that identifies how the corridor will operate in the future from a mobility congestion standpoint. **Directional Closures** – the average number of times a given location in the corridor was closed per mile in a specific direction of travel per year. **Directional Travel Time Index (TTI)** – the ratio of the average peak period travel time to the free-flow travel time. The TTI represents recurring delay along the corridor. **Directional Planning Time Index (PTI)** – the ratio of the total travel time needed for 95 percent on-time arrival to free-flow travel time. The PTI represents non-recurring delay along the corridor. **% Non-single Occupancy Vehicle Trips (Non-SOV)** – represents the percentage of trips that are taken by vehicles carrying more than one occupant. **Bicycle Accommodation** – represents the percentage of roadway that is accommodating for bicycle travel.	**% SHSP Emphasis Area** – the percentage of fatal and incapacitating crashes that involve at least one of the five Strategic Highway Safety Plan (SHSP) Emphasis Areas on a given segment compared to the statewide average percentage of crashes involving at least one of the five SHSP Emphasis Areas on roads with similar operating environments. **Directional Safety Index** – the combination of the directional frequency and rate of fatal incapacitating injury crashes, compared to crash occurrences on similar roadways in Arizona. **% SHSP Crash Unit Types** – the percentage of total fatal and incapacitating injury crashes that involves a given crash unit type (motorcycle, truck, non-motorized traveler) is compared to the statewide average percentage on roads with similar operating environments.	**Directional Truck Planning Time Index (TPTI)** – the ratio of total travel time (for trucks only) needed for 95 percent on-time arrival to free-flow travel time. The TPTI represents non-recurring delay along the corridor. **Directional Truck Travel Time Index (TTTI)** – the ratio of the average peak period travel time (for trucks only) to the free-flow travel time. The TTTI represents recurring delay that occurs along the corridor. **Directional Closure Duration** – the average time a given location in the corridor was closed per mile per year. **Bridge Clearance** – the minimum vertical clearance for all underpass structures within each segment as determined via the ADOT Bridge Database.

Figure 5: Performance Index Summary



Performance Area	87-1	87-2	87-3	87-4	87-5	87-6	87-7	260-8	260-9	260-10	260-11	260-12	260-13	277-14	377-15	77-16	40B-17	Weighted Average
Pavement	4.19	4.25	3.80	4.05	4.55	4.15	3.54	4.31	4.27	4.03	4.13	3.78	3.11	2.05	4.12	3.25	No Data	3.94
Bridge	7.00	7.00	6.95	6.31	6.31	No Bridges				6.81	6.73	7.00	6.00	No Bridges		6.00	No Bridges	6.70
Mobility	0.65	0.73	0.21	0.23	0.15	0.21	0.75	0.54	0.94	0.08	0.12	0.36	0.14	0.09	0.09	0.85	0.45	0.26
Safety	3.01	0.62	1.19	1.62	1.22	2.11	1.32	0.28	1.63	0.93	0.32	1.43	0.11	0.13	1.18	2.19	3.46	1.26
Freight	0.28	0.29	0.53	0.51	0.56	0.44	0.28	0.15	0.47	0.58	0.54	0.69	0.36	No Data		0.22	0.05	0.50

SR 87/SR 260/SR 377 Corridor Profile Study: Loop 202 to I-40
Primary Performance Index Summary

3.1 Pavement

Approximately 210 of the 230 miles on I-10 East are rated “good” for the overall Pavement Index, which consists of the primary measures Pavement Serviceability Rating (roughness rating) and Pavement Distress Index (cracking rating). Segment 10E-2 traversing the Gila River Indian Community was the exception, with a “fair” performance rating. Segment 10E-8 rated poorly for the percentage of area in failure due to the high IRI for a 2-mile stretch at the end of the segment.

3.2 Bridge

The overall Bridge Index for the I-10 East corridor is “fair.” Three segments fell within the “good” performance rating and one fell within “poor,” the remaining 12 were rated as “fair.” The Bridge Index consists of the deck, substructure, superstructure, and structural ratings. A total of 181 bridges were included in the evaluation. Sixteen bridges rated as structurally deficient, with one or more ratings of 4 for deck, substructure, superstructure, and structural elevation. In addition, 16 bridges have multiple ratings of 5 for deck, substructure, superstructure, and structural elevation. Four of the 16 segments analyzed on I-10 East exceeded the threshold for “poor” performance as a percentage of Functionally Obsolete Bridges by current ADOT design standards. These include Segments 10E-4 (48.2 percent), 10E-10 (71.1 percent), 10E-13 (72.2 percent), and 10E-14 (43.5 percent).

3.3 Mobility

The I-10 East corridor rated in the “good” threshold of the Primary Mobility Index. Two operating environments were used to evaluate the mobility of the corridor. These were Urban and Fringe Urban Environments and Rural Environments. The current capacity of the corridor is considered “good;” however, the future capacity is considered “fair.” The segments through the urban areas of Phoenix and Tucson have the worst mobility along the corridor, with ratings of “fair” or “poor” for current and future mobility.

Most segments in the eastbound direction have “fair” performance in the closure performance measure, whereas in the westbound direction most of the segments have “good” performance. The corridor has “good” TTI performance, with the exception of segment 10E-1 in both directions and segment 10E-13 eastbound, which have “fair” performance. The PTI is variable throughout the corridor. The urban areas have “poor” performance, and segments 10E-11 through 10E-14 and 10E-16 have “fair” performance. The PTI measure is “fair” overall for the corridor, indicating the I-10 East has moderately reliable travel time.

All 16 segments along the corridor have “fair” or “poor” performance for the percentage of non-SOVs, meaning that many vehicles on the corridor carry only one occupant. All of the segments show “good” performance for accommodation of bicycles (based exclusively on the shoulder width); however, bicycles are prohibited on the corridor from MPs 160 to 270 along I-10 East.

3.4 Safety

The Safety Index of only 4 of the 16 segments rated “good/above average” when compared with the statewide average within similar operating environments, in terms of fatal and incapacitating injury crashes. The overall Safety Index of the corridor was “fair/average.” The safety performance evaluation used five operating environments for analysis:

- Rural 4-Lane Freeway with Daily Volume less than 25,000
- Rural 4-Lane Freeway with Daily Volume greater than 25,000
- Urban 4-Lane Freeway
- Urban or Rural 6-Lane Freeway
- Urban greater than 6-Lane Freeway

Analysis of the 5-year crash period dataset (January 2010 through December 2014), identified 58 fatal crashes and 97 incapacitating injury crashes in the urban area. In the rural area, there were 82 fatal crashes and 173 incapacitating injury crashes. Segment 10E-10 had the highest percentage of fatal and incapacitating crashes caused by the top five emphasis areas of the *Strategic Highway Safety Plan* (SHSP). Segments 2, 4, 5, 8, 11, 14 and 15 perform “below average” in truck-involved crashes, the remaining segments perform at “average” or “above average”. The entire corridor had an insufficient sample size of crash data to be able to conduct an analysis of safety performance related to crashes involving motorcycles or non-motorized travelers (pedestrians and bicyclists).

3.5 Freight

The performance of freight mobility is overall “good” within the I-10 East corridor, with the exception of segments 10E-1, 10E-7, 10E-8, and 10E-9 in the Phoenix and Tucson urban areas, which fell within the “fair” or “poor” scoring thresholds. Segment 10E-1 fell within the “fair” range for Directional TTTI; all other segments were rated as “good.” This means that there is little difference between the observed truck free-flow speed and peak period truck speeds for both the eastbound and westbound directions. Rural segments outside Phoenix and Tucson area are rated as “good” for Directional TPTI, with the exception of segment 10E-14, which rated as “fair” in the westbound direction. Segment 10E-8 eastbound was the only urban segment to rate as “fair” in the eastbound direction—the remaining urban segments rated “poor.” This indicates that there are non-recurring delays (for example, crashes and weather-related conditions) through the urban areas of Phoenix and Tucson. Overall, the eastbound closure duration fell within the “fair” threshold and westbound within the “good” threshold. In addition, bridges with height restrictions (less than 16 feet) exist throughout the I-10 East corridor. Bridges in Segments 10E-2 through 10E-5, 10E-14, and 10E-16 have height restrictions where trucks are not able to ramp around the restriction and need to take alternative routes

4.0 CORRIDOR PERFORMANCE GOALS AND OBJECTIVES

The I-10 East corridor is an Interstate facility providing movement for automobile, freight, tourism, and recreational travel within and through Arizona. It provides a key link between the Phoenix and Tucson metropolitan areas as well as connecting Arizona with other states such as California and New Mexico. I-10 is designated as a *Primary Highway Freight Network* by the Federal Highway Administration and is also identified as a *Key Commerce Corridor* within Arizona. I-10 plays a vital role transporting fresh produce and agricultural goods from Mexico to Arizona and other states because it is connects with the busiest Arizona land port of entry (Mariposa) by way of I-19. Based on discussions with primary stakeholders within the corridor, the performance goals for the I-10 East corridor are described below.

The I-10 East corridor performance goals are:

- Support goals identified in the regional studies such as *What Moves You Arizona* Long-Range Transportation Plan as well as Arizona's *Key Commerce Corridors*
- Preserve, modernize, and expand highway infrastructure as driven by demand and growth
- Improve system mobility and efficiency through additional capacity and improved roadway geometry
- Promote safety by implementing appropriate countermeasures, education, and awareness
- Provide a safe and reliable route for general commuting, commerce, recreational, and tourist travel
- Provide a safe, reliable, and efficient connection for the communities, major activity and business hubs along the corridor

Statewide goals and performance measures were established by the ADOT Long-Range Transportation Plan (LRTP), 2010–2035, *What Moves You Arizona,* through an extensive outreach program. The statewide goals relevant to the I-10 East performance framework areas have been identified as part of Working Paper 3 efforts and were aligned with the corridor goals formulated for the five performance areas. Table 4 shows the aligned statewide and I-10 East goals.

- Increase mobility and multi-modal accessibility
- Reduce congestion improving delay and travel time
- Reduce delays and restrictions to improve freight travel and planning time reliability
- Reduce delays and restrictions to improve freight travel and planning time reliability
- Minimize impacts from non-recurring events (crash, weather) on freight mobility
- Maintain structural integrity of bridges
- Develop an action plan to maintain uninterrupted connectivity in an event of emergency
- Enhance system efficiency through education, ITS, and technology
- Reduce fatal and incapacitating injury crashes
- Reduce frequency of road closures through efficient emergency management plan

Table 4 shows the aligned statewide and I-10 East corridor goals and objectives.

4.1 Stakeholder Input

Meetings were held with the following agencies to review the performance framework, performance measures, and performance outcome, and to discuss performance goals and objectives:

- **ADOT Central District and Maricopa Association of Governments – February 29, 2016.** Meeting attended by Patricia L. Brown (Wilson and Company); M. Reddy (ADOT); Raul Amavisca (ADOT); Chaun Hill (MAG); Quinn Castro (MAG); Michael Grandy (Kimley Horn); Asadul Karim (ADOT); Heidi Yaqub (ADOT); Tazeen A. Dewan (ADOT); Christopher (Kimley Horn); Eric Sweat (Kimley Horn); Faisal Chowdhury (HDR); Michael LaBianca (HDR); Brian Snyder (Wilson and Company).
- **ADOT South Central District, Pima Association of Governements (PAG), Sun Corridor Metropolitan Planning Organization, South Eastern Arizona Association of Governemts, Central Arizona Governements – March 1, 2016.** Meeting attended by Emily Dawson (ADOT), Tazeen Dewan (ADOT), Asadul Karim (ADOT), Tyler Besch (AECOM), Ed Hocker (AECOM), Joy Melita (Parsons Brinckerhoff), Jennifer Love (Parsons Brinckerhoff), Sam Sanford (PAG); Dee Crumbacher (ADOT); Jay Gomes (ADOT); Rod Lane (ADOT); Faisal Chowdhury (ADOT); Maria Deal (ADOT); Michael LaBianca (HDR).
- **ADOT Southeast District, South Eastern Arizona Association of Governemts, Central Arizona Governements – March 8, 2016.** Meeting attended by Bill Harmon (ADOT); Tom Engel (ADOT); Tazeen Dewan (ADOT); Asadul Karim (ADOT); Paul David (ADOT); Joy Melita (Parsons Brinckerhoff); Jennifer Love (Parsons Brinckerhoff); Dee Crumbacher (ADOT); Jay Gomes (ADOT); Maria Deal (ADOT); Wayne Grainer (ADOT); Faisal Chowdhury (ADOT); Maria Deal (ADOT); Michael LaBianca (HDR).

The meeting attendees provided the following comments, grouped by performance area, with respect to the results of the performance evaluation and the development of goals and objectives for the corridor:

General Comments

- There is a future connection potential of SR 210 with I-10, as a result the traffic pattern is anticipated to change in this area; there may be a need to revise the segmentation based on new SR 210 connection.
- At the South Central District meeting, it was suggested that corridors where riding bicycle is prohibited be explicitly identified. The team will highlight the segments where bicycle is prohibited.
- Participants at the meetings felt that the three proposed emphasis area appears reasonable for I-10 corridor; i.e., mobility, safety, and freight.
- Sam Sanford at PAG expressed interest to present I-10 performance evaluation summary and emphasis areas at a stakeholder meeting comprising key PAG staff. ADOT and HDR will coordinate to organize this meeting sometimes in mid-April (2016).

Pavement Performance Area

- Question was asked at South Central and Southeast District meetings whether paved shoulder condition is part of the pavement condition assessment; I-19 and I-10 junction has

some recent pavement preservation projects; however, it shows hotspots in the pavement performance analysis for this corridor segment. Consultant will check with pavement management group for data accuracy and timeliness.

- The Southeast District noted that it was interesting that there is no hotspot pavement condition reported between routes 80 and 90; roadway here is rough and the District would like to do concrete paving here to alleviate problems.

Bridge Performance Area

- The bridge across the Gila River does not have shoulder, no barrier and has "No Stopping" sign; the bridge appears functionally obsolete but is not identified as a hot spot. [note: HDR reviewed the bridge rating and ADOT data and bridge condition is represented correctly per the available data.]
- A recent pavement improvement project at the junction of SR 587 and I-10 was completed; multiple pavement hotspots are identified at that location [note: this should be revealed when the needs assessment reviews recently completed pavement projects.].
- It was suggested by Central District that bridge should be considered as as an emphasis area looking at the overall bridge performance along the corridor. Another suggestion was to use composite emphasis area including both bridge and mobility as congestion is not an issue in rural Arizona.
- At the South Central District meeting it was reported that ADOT identified upcoming projects to improve bridge decks at Craycroft Road and Wilmont Road bridges; both of which were identified as hot spots performing poorly in deck rating. The Corridor Needs Assessment (working paper 4) will summarize the programmed and planned projects and these improvements will be taken into account.
- Reported by the Southeast District that older bridges along I-10 are functionally obsolete, but stout – will likely last a while as those are structurally adequate.
- The Southeast District asked about the condition rating for San Simone bridge; it was reported that the data shows bridge ratings do not meet the criteria to be considered as a hot spot.

Mobility Performance Area

- ADOT constructed auxiliary lanes on I-10 at SR 347; this additional lane should help reducing the number of crash and improve mobility.
- At the Southeast District meeting it was suggested that the locations where bicycling is explicitly prohibited be called out as such; as it stands, the report notes whether or not a whether shoulder meets specific criteria for bicycle accommodation, regardless of whether they are prohibited or not.
- Westbound traffic in the area of Texas Canyon experiences congestion due to steep grades.
- The roadway closure within the New Mexico due to non-recurring delay results in traffic back up in eastbound direction within Arizona which may impact travel and planning time at AZ/NM State Line.

Safety Performance Area

- Southeast District reported that there is considerable effort expended on clearing vegetation along roadside (NM to Bowie) which can obscure sight-lines.

Freight Performance Area

- I-10 is a heavy truck corridor. However, the truck involved fatal and incapacitating crashes show "Insufficient Data" at segment 1. [note: HDR looked into the crash dataset and no changes necessary.]
- The trumpet-style ramp traffic interchange on I-10 at Cochise requires trucks traveling northbound to westbound on US 191 have to take exit at milepost 331; trucks often use alternative routes along state and local (county) routes to avoid the low clearance bridge.

4.2 Performance Emphasis Areas

Based on agency input, the performance of mobility, safety, and freight were identified as "emphasis areas" for the I-10 East corridor. These three emphasis areas will warrant more attention and focus than the other performance areas on the I-10 East corridor. Subsequently, the corridor-wide weighted average performance objectives for mobility, safety, and freight are identified with a higher standard than the corridor-wide weighted average performance objectives for other performance areas.

4.3 Performance Objectives

Considering the corridor performance goals and identified emphasis areas, performance objectives were developed. The objectives are to be measured using the primary and secondary measurements for each performance area, with the aim of achieving a desired level of performance. The desired performance is based on scale levels for the overall corridor and for each corridor segment.

The performance objectives for the five performance areas are shown in **Table 4**. The colors shown in **Table 4** represent the corresponding level of performance as described earlier, with green indicating "good" of "above average" performance and yellow indicating "fair" or "average" performance. Good or above average performance is the desired performance objective for the corridor weighted average of each primary measure for performance areas designated as emphasis areas. Fair or average performance is the desired objective for all segments in all performance areas and for the corridor weighted average for performance areas that are not emphasis areas.

Table 4: Performance Goals and Objectives

ADOT Statewide LRTP Goals	I-10 East Corridor Goals	I-10 East Corridor Objectives	Performance Area	Performance Measure	Performance Objective	
					Corridor Average	Segment
Improve Mobility and Accessibility	Improve system mobility and efficiency through additional capacity and improved roadway geometry Provide a safe and reliable route for general commuting, commerce, recreational, and tourist travel Provide a safe, reliable, and efficient connection for the communities, major activity, and business hubs along the corridor	Increase mobility and multi-modal accessibility	Mobility (*Emphasis Area*)	Mobility Index	Good	Fair or better
				Existing Directional Peak Hour V/C		Fair or better
				Future Daily V/C		Fair or better
		Reduce congestion improving delay and travel time		Directional Closure Frequency		Fair or better
				Directional Travel Time Index		Fair or better
				Directional Planning Time Index		Fair or better
				Percent Non-SOV Trips		Fair or better
		Reduce delays from non-recurring events and incidents to improve reliability and efficiency		Percent Bicycle Accommodation		Fair or better
Support Economic Growth	Support goals identified in the regional studies such as *What Moves You Arizona* Long-Range Transportation Plan as well as Arizona's *Key Commerce Corridors*	Reduce delays and restrictions to improve freight travel and planning time reliability	Freight *(Emphasis Area)*	Freight Index	Good	Fair or better
		Minimize impacts from non-recurring events (crash, weather) on freight mobility		Directional Truck Travel Time Index		Fair or better
		Reduce delays to freight movement		Directional Truck Planning Time Index		Fair or better
		Improve travel time reliability		Directional Closure Duration		Fair or better
		Enhance system efficiency through education, ITS, and technology		Bridge Vertical Clearance		Fair or better
Preserve and Maintain the State Transportation System	Preserve and modernize highway infrastructure as driven by demand and growth	Maintain structural integrity of bridges	Bridge	Bridge Index	Fair or better	Fair or better
				Bridge Sufficiency Rating		Fair or better
		Develop an action plan to maintain uninterrupted connectivity in an event of emergency		Bridge Rating		Fair or better
				Percent Deck Area on Functionally Obsolete Bridges		Fair or better
		Improve pavement ride quality	Pavement	Pavement Index	Fair or better	Fair or better
				Directional Pavement Serviceability		Fair or better
				Percent Pavement Area Failure		Fair or better

ADOT Statewide LRTP Goals	I-10 East Corridor Goals	I-10 East Corridor Objectives	Performance Area	Performance Measure	Performance Objective	
					Corridor Average	Segment
Enhance Safety and Security	Provide a safe and reliable route for general commuting, commerce, recreational, and tourist travel Provide a safe, reliable, and efficient connection for the communities, major activity, and business hubs along the corridor Promote safety by implementing appropriate countermeasures, education, and awareness	Reduce fatal and incapacitating injury crashes	Safety *(Emphasis Area)*	Safety Index	Above Average	Fair or better
				Percent SHSP Emphasis Areas		Fair or better
		Reduce frequency of road closures through efficient emergency management plan		Directional Safety Index		Fair or better
				Crash Unit Type		Fair or better

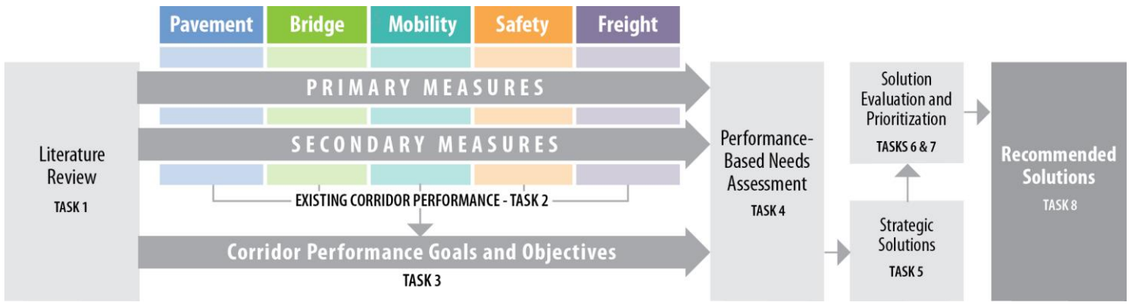
5.0 NEXT STEPS

The overall Corridor Profile Study process is shown in **Figure 6**. The process consists of eight tasks where the final results will provide candidate projects for P2P prioritization and will inform the LRTP Update.

The next step in the I-10 East Corridor Profile Study will be to conduct a needs assessment based on the relationship between the existing performance and the desired performance (Task 4). The corridor team will compare measured performance completed in Task 2 with the Corridor Objectives and Goals identified in this Working Paper 3 (Task 3). A "need" is identified when measured performance does not meet the expected performance objective.

The next deliverable, Working Paper 4, will report the findings from a needs analysis to help identify strategic improvements. The needs analysis will take a detailed look at the available data sets for each of the primary and secondary performance measures (including the "hot spots"). Following the needs assessment, "solution sets" will be developed to address the identified needs and improve performance (Task 5).

Figure 6: Profile Study Process



- **TASK 1** assesses work already completed in the corridor through a literature review
- **TASK 2** determines existing corridor performance based on data collected for the identified performance areas
- (pavement, bridge, mobility, safety and freight)
- **TASK 3** develops long-term goals and objectives that define how the corridor can be expected to function, its primary purpose and performance emphasis areas
- **TASK 4** assesses corridor needs by comparing existing conditions to expected performance
- **TASK 5** formulates strategic candidate solutions to raise performance levels throughout the corridor with a focus on elevated need areas
- **TASK 6** uses life-cycle cost analysis and benefit-cost analysis to determine the most cost effective solution option
- **TASK 7** determines performance effectiveness and risk factors for use in prioritizing solutions
- **TASK 8** describes the recommended solutions using pre-scoping reports for future use in programming projects